RESPONSE TO OFFICE ACTION Serial No. 10/706,902

Page 2 of 4

IN THE SPECIFICATION

Please amend paragraph [0030] of the originally filed specification as follows:

[0030] This invention is a highly selective plasma etch process of SLAM over the dielectric material (such as CDO). The plasma process utilizes a mixture of hydrofluorocarbon hydrofluorocarbon (HFC), fluorocarbon (optional), oxygen, nitrogen and inert gases to achieve higher than 5:1 selectivity, preferably higher than 10:1, and at an etch rate greater than 200 angstrom per minute, preferably greater than 500 angstrom per minute. The preference of greater than 10:1 etch selectivity allows the removal of SLAM without significant loss of CDO. The etch rate also needs to be high enough (> 500 angstrom per minute) to make the process useful in manufacturing integrated circuits.

Please amend paragraph [0042] of the originally filed specification as follows:

[0042] Plasma containing hydrofluorocarbon and/or fluorocarbon gases have been used to break Si-O bond in the dielectric material. The etching reaction may include,

$$2CF_2 + SiO_2 -> SiF_4 + CO$$

Since SLAM contains siloxane polymer, it makes sense to include <u>hydrofluorocarbon</u> hydrofluorocarbon and/or fluorocarbon gases in the gas mixture to assist in breaking the Si-O bond. The hydrogen-rich fluorocarbon gas can also have another function. Hydrogen-containing gas can provide hydrogen or hydrogen-containing radicals in the etching plasma that, when combined with nitrogen or nitrogen-containing radicals, break the Si-CH₃ bond faster, resulting in faster etch rate and higher etch selectivity. The oxygen gas provides oxygen radicals to react with the hydrocarbon components of the organic polymer of the photoresist and SLAM to form gaseous carbon compounds, such as CO, CO₂, and hydrogen compounds, such as HF, other carbon-containing or

hydrogen-containing gases, that are exhausted from the process chamber. Nitrogen-containing gas in the process gas has been found to help break the Si-CH₃ bond

Please amend the table following paragraph [0051] of the originally filed specification as follows:

O2 flow rate (sccm)	PR etch rate (Å/min)	SLAM/CDO etch selectivity
30	1380	1.6
40	2100	1.2

Table [[6]] <u>7 CDO PR</u> etch rate and SLAM/CDO etch selectivity as a function of <u>O2 flow</u> rate cathode temperature.

Please amend the **ABSTRACT** of the originally filed specification as follows:

A process of selectively etching a sacrificial light absorbing material (SLAM) over a dielectric material, such as carbon doped oxide, on a substrate using a plasma of a gas mixture in a plasma etch chamber. The gas mixture comprises a hydrofluorocarbon gas, an optional hydrogen-containing gas, an optional fluorine-rich fluorocargon fluorocarbon gas, a nitrogen gas, an oxygen gas, and an inert gas. The process could provide a SLAM to a dielectric material etching selectivity ratio greater than 10:1.